

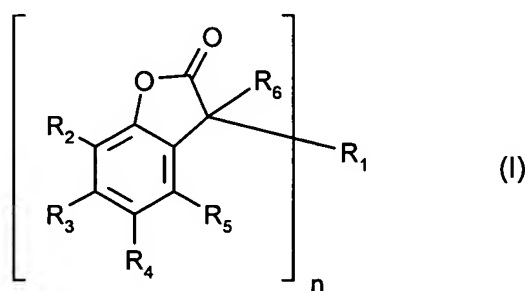
1. (currently amended): A heat-curable powder coating composition comprising

a) ~~an organic film-forming binder~~ epoxy resin, a polyester-hydroxyalkylamide, a polyester-glycoluril, an epoxy-polyester resin, a polyester-triglycidyl isocyanurate, a hydroxy-functional polyester-blocked polyisocyanate, a hydroxy-functional polyester-uretdione, an acrylate resin with hardener or a mixture of such resins

and

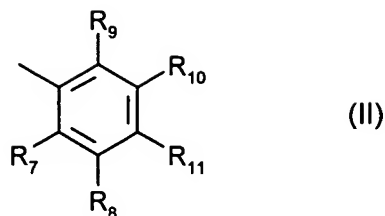
b) as stabilizer at least one compound of the benzofuran-2-one type,  
which composition in the course of curing is in contact with nitrogen oxides originating from combustion gases.

2. (currently amended): A heat-curable powder coating composition according to claim 1, in which component (b) is a compound of the formula I



in which, if n is 1,

R<sub>1</sub> is unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-, C<sub>1</sub>-C<sub>4</sub>alkoxy-, C<sub>1</sub>-C<sub>4</sub>alkylthio-, hydroxyl-, halogen-, amino-, C<sub>1</sub>-C<sub>4</sub>alkylamino-, phenylamino- or di(C<sub>1</sub>-C<sub>4</sub>alkyl)amino-substituted naphthyl, phenanthryl, anthryl, 5,6,7,8-tetrahydro-2-naphthyl, 5,6,7,8-tetrahydro-1-naphthyl, thienyl, benzo[b]thienyl, naphtho[2,3-b]thienyl, thianthrenyl, dibenzofuryl, chromenyl, xanthenyl, phenoxathiinyl, pyrrolyl, imidazolyl, pyrazolyl, pyrazinyl, pyrimidinyl, pyridazinyl, indoliziny, isoindolyl, indolyl, indazolyl, purinyl, quinoliziny, isoquinolyl, quinolyl, phthalazinyl, naphthyridinyl, quinoxaliny, quinazolinyl, cinnoliny, pteridinyl, carbazolyl, β-carboliny, phenanthridinyl, acridinyl, perimidiny, phenanthroliny, phenazinyl, isothiazolyl, phenothiazinyl, isoxazolyl, furazanyl, biphenyl, terphenyl, fluorenyl or phenoxazinyl, or R<sub>1</sub> is a radical of the formula II



and,

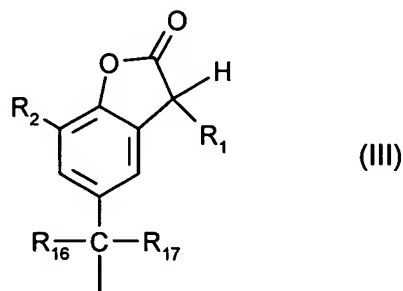
if n is 2,

R<sub>1</sub> is unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl- or hydroxyl-substituted phenylene or naphthylene; or is -R<sub>12</sub>-X-R<sub>13</sub>-,

R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> independently of one another are hydrogen, chlorine, hydroxyl, C<sub>1</sub>-C<sub>25</sub>-alkyl, C<sub>7</sub>-C<sub>9</sub>phenylalkyl, unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenyl; unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted C<sub>5</sub>-C<sub>8</sub>cycloalkyl; C<sub>1</sub>-C<sub>18</sub>alkoxy, C<sub>1</sub>-C<sub>18</sub>alkylthio, C<sub>1</sub>-C<sub>4</sub>alkylamino, di(C<sub>1</sub>-C<sub>4</sub>-alkyl)amino, C<sub>1</sub>-C<sub>25</sub>alkanoyloxy, C<sub>1</sub>-C<sub>25</sub>alkanoylamino, C<sub>3</sub>-C<sub>25</sub>alkenoyloxy, C<sub>3</sub>-C<sub>25</sub>-alkanoyloxy

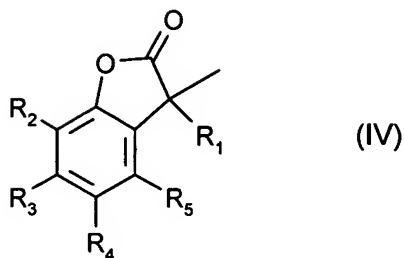
interrupted by oxygen, sulfur or  $\text{>N-R}_{14}$  ; C<sub>6</sub>-C<sub>9</sub>cycloalkylcarbonyloxy, benzoyloxy or C<sub>1</sub>-C<sub>12</sub>alkyl-

substituted benzoyloxy; or else the radicals R<sub>2</sub> and R<sub>3</sub> or the radicals R<sub>3</sub> and R<sub>4</sub> or the radicals R<sub>4</sub> and R<sub>5</sub> , together with the carbon atoms to which they are attached, form a benzo ring, R<sub>4</sub> is additionally -(CH<sub>2</sub>)<sub>p</sub>-COR<sub>15</sub> or -(CH<sub>2</sub>)<sub>q</sub>OH or, if R<sub>3</sub>, R<sub>5</sub> and R<sub>6</sub> are hydrogen, R<sub>4</sub> is additionally a radical of the formula III



in which R<sub>1</sub> is as defined above for n = 1,

R<sub>6</sub> is hydrogen or a radical of the formula IV



where  $R_4$  is not a radical of the formula III and  $R_1$  is as defined above for  $n = 1$ ,

$R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{10}$  and  $R_{11}$  independently of one another are hydrogen, halogen, hydroxyl,  $C_1$ - $C_{25}$ alkyl,  $C_2$ -

$C_{25}$ alkyl interrupted by oxygen, sulfur or  $\text{>N-R}_{14}$  ;  $C_1$ - $C_{25}$ alkoxy,  $C_2$ - $C_{25}$ -alkoxy interrupted by

oxygen, sulfur or  $\text{>N-R}_{14}$  ;  $C_1$ - $C_{25}$ alkylthio,  $C_3$ - $C_{25}$ alkenyl,  $C_3$ - $C_{25}$ -alkenyloxy,  $C_3$ - $C_{25}$ alkynyl,

$C_3$ - $C_{25}$ alkynyloxy,  $C_7$ - $C_9$ phenylalkyl,  $C_7$ - $C_9$ phenylalkoxy, unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl;  
unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenoxy; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted

$C_5$ - $C_8$ cycloalkyl; unsubstituted or  $C_1$ - $C_4$ -alkyl-substituted  $C_5$ - $C_8$ cycloalkoxy;  $C_1$ - $C_4$ alkylamino,

di( $C_1$ - $C_4$ alkyl)amino,  $C_1$ - $C_{25}$ alkanoyl,  $C_3$ - $C_{25}$ alkanoyl interrupted by oxygen, sulfur or  $\text{>N-R}_{14}$  ;

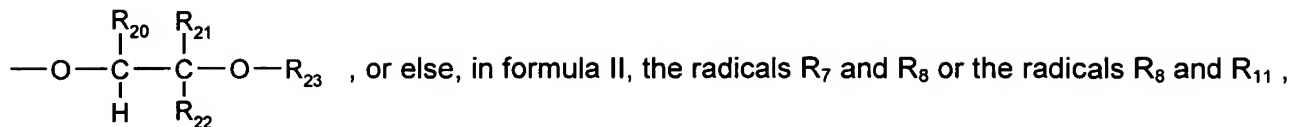
$C_1$ - $C_{25}$ alkanoyloxy,  $C_3$ - $C_{25}$ -alkanoyloxy interrupted by oxygen, sulfur or  $\text{>N-R}_{14}$  ;

$C_1$ - $C_{25}$ alkanoylamino,  $C_3$ - $C_{25}$ -alkenoyl,  $C_3$ - $C_{25}$ alkenoyl interrupted by oxygen, sulfur or  $\text{>N-R}_{14}$  ;

$C_3$ - $C_{25}$ alkenoyloxy,  $C_3$ - $C_{25}$ alkenoyloxy interrupted by oxygen, sulfur or  $\text{>N-R}_{14}$  ;

$C_6$ - $C_9$ cycloalkylcarbonyl,  $C_6$ - $C_9$ cycloalkylcarbonyloxy, benzoyl or  $C_1$ - $C_{12}$ alkyl-substituted benzoyl;

benzoyloxy or  $C_1$ - $C_{12}$ alkyl-substituted benzoyloxy;  $\text{—O—}\overset{\overset{R_{18}}{|}}{\underset{\underset{R_{19}}{|}}{C}}\text{—}\overset{\overset{O}{||}}{C}\text{—}R_{15}$  or



together with the carbon atoms to which they are attached, form a benzo ring,

R<sub>12</sub> and R<sub>13</sub> independently of one another are unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenylene or naphthylene,

R<sub>14</sub> is hydrogen or C<sub>1</sub>-C<sub>8</sub>alkyl,

R<sub>15</sub> is hydroxyl,  $\left[ \text{—O}^- \frac{1}{r} \text{M}^{r+} \right]$ , C<sub>1</sub>-C<sub>18</sub>alkoxy or  $\text{—N} \begin{matrix} \text{R}_{24} \\ \text{R}_{25} \end{matrix}$ ,

R<sub>16</sub> and R<sub>17</sub> independently of one another are hydrogen, CF<sub>3</sub>, C<sub>1</sub>-C<sub>12</sub>alkyl or phenyl, or R<sub>16</sub> and R<sub>17</sub>, together with the C atom to which they are attached, form an unsubstituted or mono- to tri-C<sub>1</sub>-C<sub>4</sub>alkyl-substituted C<sub>5</sub>-C<sub>8</sub>cycloalkylidene ring;

R<sub>18</sub> and R<sub>19</sub> independently of one another are hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or phenyl,

R<sub>20</sub> is hydrogen or C<sub>1</sub>-C<sub>4</sub>alkyl,

R<sub>21</sub> is hydrogen, unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenyl; C<sub>1</sub>-C<sub>25</sub>alkyl, C<sub>2</sub>-C<sub>25</sub>alkyl interrupted by

oxygen, sulfur or  $\text{>N—R}_{14}$ ; C<sub>7</sub>-C<sub>9</sub>phenylalkyl which is unsubstituted or substituted on the phenyl

radical 1 to 3 times by C<sub>1</sub>-C<sub>4</sub>alkyl; C<sub>7</sub>-C<sub>25</sub>phenylalkyl which is interrupted by oxygen, sulfur or

$\text{>N—R}_{14}$  and which is unsubstituted or substituted on the phenyl radical 1 to 3 times by

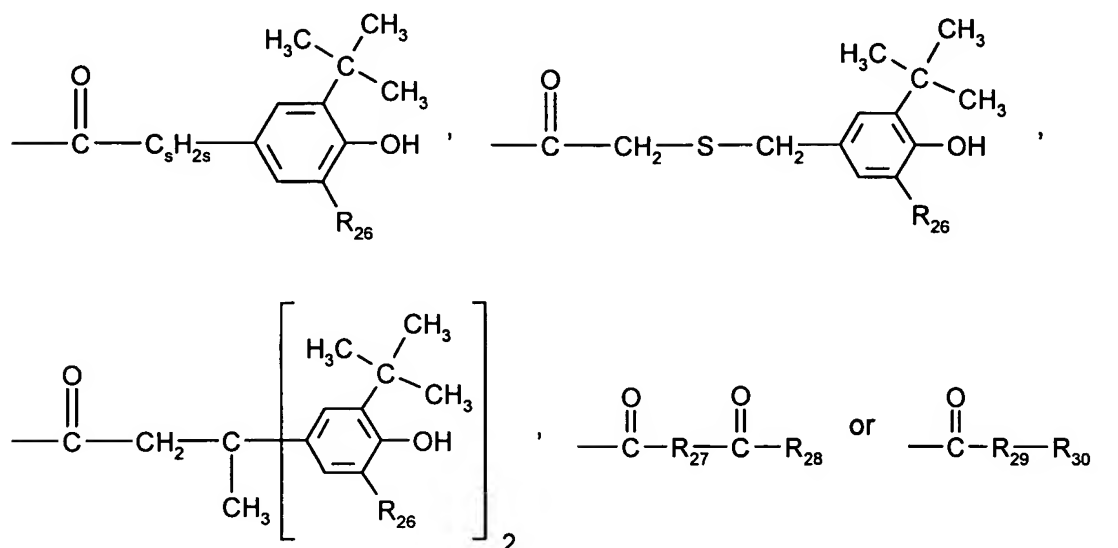
C<sub>1</sub>-C<sub>4</sub>alkyl, or else the radicals R<sub>20</sub> and R<sub>21</sub>, together with the carbon atoms to which they are attached, form an unsubstituted or mono- to tri-C<sub>1</sub>-C<sub>4</sub>alkyl-substituted C<sub>5</sub>-C<sub>12</sub>cycloalkylene ring;

R<sub>22</sub> is hydrogen or C<sub>1</sub>-C<sub>4</sub>alkyl,

R<sub>23</sub> is hydrogen, C<sub>1</sub>-C<sub>25</sub>alkanoyl, C<sub>3</sub>-C<sub>25</sub>alkenoyl, C<sub>3</sub>-C<sub>25</sub>alkanoyl interrupted by oxygen, sulfur or

$\text{>N—R}_{14}$ ; C<sub>2</sub>-C<sub>25</sub>alkanoyl substituted by a di(C<sub>1</sub>-C<sub>6</sub>alkyl)phosphonate group;

C<sub>6</sub>-C<sub>9</sub>cycloalkylcarbonyl, thenoyl, furoyl, benzoyl or C<sub>1</sub>-C<sub>12</sub>alkyl-substituted benzoyl;



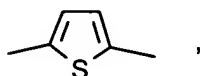
R<sub>24</sub> and R<sub>25</sub> independently of one another are hydrogen or C<sub>1</sub>-C<sub>18</sub>alkyl,

R<sub>26</sub> is hydrogen or C<sub>1</sub>-C<sub>8</sub>alkyl,

R<sub>27</sub> is a direct bond, C<sub>1</sub>-C<sub>18</sub>alkylene, C<sub>2</sub>-C<sub>18</sub>alkylene interrupted by oxygen, sulfur or  $\text{N}-\text{R}_{14}$  ;

C<sub>2</sub>-C<sub>18</sub>alkenylene, C<sub>2</sub>-C<sub>20</sub>alkylidene, C<sub>7</sub>-C<sub>20</sub>phenylalkylidene, C<sub>5</sub>-C<sub>8</sub>-cycloalkylene,

C<sub>7</sub>-C<sub>8</sub>bicycloalkylene, unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted phenylene,  or



R<sub>28</sub> is hydroxyl,  $\left[ -\text{O}^- \frac{1}{r} \text{M}^{r+} \right]$ , C<sub>1</sub>-C<sub>18</sub>alkoxy or  $\text{---N} \begin{array}{l} \text{R}_{24} \\ \text{R}_{25} \end{array}$ ,

R<sub>29</sub> is oxygen, -NH- or  $\text{---N} \begin{array}{c} \text{O} \\ \parallel \\ \text{---C---NH---R}_{30} \end{array}$ ,

R<sub>30</sub> is C<sub>1</sub>-C<sub>18</sub>alkyl or phenyl,

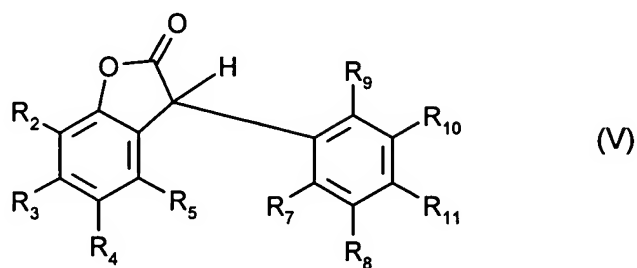
R<sub>31</sub> is hydrogen or C<sub>1</sub>-C<sub>18</sub>alkyl,

M is an r-valent metal cation,

X is a direct bond, oxygen, sulfur or -NR<sub>31</sub>-,

n is 1 or 2,  
 p is 0, 1 or 2,  
 q is 1, 2, 3, 4, 5 or 6,  
 r is 1, 2 or 3, and  
 s is 0, 1 or 2.

3. (currently amended): A heat-curable powder coating composition according to claim 1, in which component (b) is a compound of the formula V

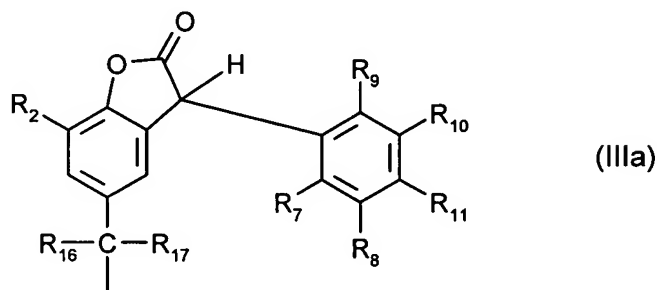


in which

R<sub>2</sub> is hydrogen or C<sub>1</sub>-C<sub>6</sub>alkyl,

R<sub>3</sub> is hydrogen,

R<sub>4</sub> is hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl or a radical of the formula IIIa



R<sub>5</sub> is hydrogen,

R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> independently of one another are hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy,

R<sub>11</sub> is hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy, C<sub>2</sub>-C<sub>8</sub>alkanoyloxy or  $\begin{array}{c} \text{R}_{20} \quad \text{R}_{21} \\ | \quad | \\ -\text{O}-\text{C}-\text{C}-\text{O}-\text{R}_{23} \\ | \quad | \\ \text{H} \quad \text{R}_{22} \end{array}$ , with the

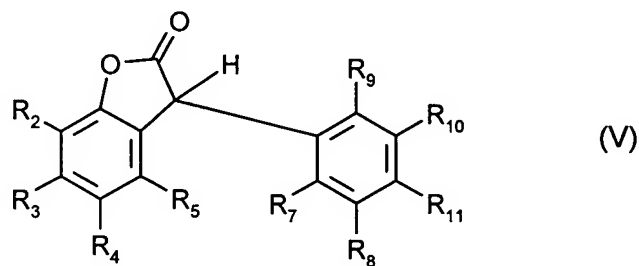
proviso that at least two of the radicals R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> are hydrogen;

R<sub>16</sub> and R<sub>17</sub>, together with the C atom to which they are attached, form an unsubstituted or mono- to tri-C<sub>1</sub>-C<sub>4</sub>alkyl-substituted cyclohexylidene ring,

R<sub>20</sub>, R<sub>21</sub> and R<sub>22</sub> are hydrogen, and

R<sub>23</sub> is C<sub>2</sub>-C<sub>18</sub>alkanoyl.

4. (currently amended): A heat-curable powder coating composition according to claim 1, in which component (b) is a compound of the formula V

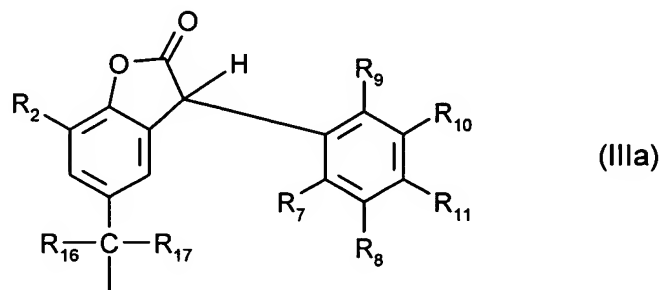


in which

R<sub>2</sub> is tert-butyl,

R<sub>3</sub> is hydrogen,

R<sub>4</sub> tert-butyl or a radical of the formula IIIa



R<sub>5</sub> is hydrogen,

R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> independently of one another are hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy,

R<sub>11</sub> is hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy, C<sub>2</sub>-C<sub>8</sub>alkanoyloxy or 
$$\begin{array}{c} \text{R}_{20} \quad \text{R}_{21} \\ | \quad | \\ -\text{O}-\text{C}-\text{C}-\text{O}-\text{R}_{23} \\ | \quad | \\ \text{H} \quad \text{R}_{22} \end{array}$$
, with the

proviso that at least two of the radicals R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> are hydrogen;

R<sub>16</sub> and R<sub>17</sub>, together with the C atom to which they are attached, form a cyclohexylidene ring,

R<sub>20</sub>, R<sub>21</sub> and R<sub>22</sub> are hydrogen, and

R<sub>23</sub> is C<sub>2</sub>-C<sub>18</sub>alkanoyl.

5. (cancelled).

6. (currently amended): A heat-curable powder coating composition according to claim 1, comprising further additives in addition to components (a) and (b).

7. (currently amended): A heat-curable powder coating composition according to claim 6, comprising as further additives, in addition, one or more components from the group consisting of pigments, dyes, fillers, levelling assistants, devolatilizing agents, charge control agents, optical brighteners, adhesion promoters, antioxidants, light stabilizers, curing catalysts, photoinitiators, wetting auxiliaries or corrosion protection agents.

8. (currently amended): A heat-curable powder coating composition according to claim 6, comprising as further additives phenolic antioxidants, sterically hindered amines, organic phosphites or phosphonites; and/or thiosynergists.

9. (currently amended): A heat-curable powder coating composition according to claim 1, in which component (b) is present in an amount of from 0.001 to 10% based on the weight of component (a).

10. (cancelled).

11. A process for reducing the discoloration of heat-curable powder coating compositions which comprises an epoxy resin, a polyester-hydroxyalkylamide, a polyester-glycoluril, an epoxy-polyester resin, a polyester-triglycidyl isocyanurate, a hydroxy-functional polyester-blocked polyisocyanate, a hydroxy-functional polyester-uretdione, an acrylate resin with hardener or a mixture of such resins,



~~which comprises~~comprising

incorporating into or applying to ~~thesesaid~~ compositions before curing at least one component (b)  
according to claim 1 compound of the benzofuran-2-one type as stabilizer,

which compositions in the course of curing, are in contact with nitrogen oxides originating from combustion gases.

12. (cancelled).

13. (currently amended): A heat-cured coating film which comprises an epoxy resin, a polyester-hydroxyalkylamide, a polyester-glycoluril, an epoxy-polyester resin, a polyester-triglycidyl isocyanurate, a hydroxy-functional polyester-blocked polyisocyanate, a hydroxy-functional polyester-uretdione, an acrylate resin with hardener or a mixture of such resins,  
wherein the cured coating film incorporates at least one compound as stabilizer of the benzofuran-2-one type and in the course of curing, the coating film is in contact with nitrogen oxides originating from combustion gases applied and cured by a process according to claim 11 or 12.

14. (new): A process for reducing the discoloration of heat-curable powder coating compositions according to claim 11 further comprising conducting the curing in a gas oven.

15. (new): A heat-curable powder coating composition according to claim 1, in which component (a) is an epoxy-polyester resin or a hydroxy-functional polyester-uretdione.

16. (new): A heat-curable powder coating composition according to claim 16, in which component (a) is an epoxy-polyester resin.